



# Source Water Assessment Program (SWAP) Report for Dragon Hill Condominium

## What is SWAP?

The Source Water Assessment Program (SWAP), established under the federal Safe Drinking Water Act, requires every state to:

- inventory land uses within the recharge areas of all public water supply sources;
- assess the susceptibility of drinking water sources to contamination from these land uses; and
- publicize the results to provide support for improved protection.

## SWAP and Water Quality

Susceptibility of a drinking water source does *not* imply poor water quality. Actual water quality is best reflected by the results of regular water tests.

Water suppliers protect drinking water by monitoring for more than 100 chemicals, treating water supplies, and using source protection measures to ensure that safe water is delivered to the tap.

Prepared by the  
Massachusetts Department of  
Environmental Protection,  
Bureau of Resource Protection,  
Drinking Water Program

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Table 1: Public Water System (PWS) Information

<i>PWS Name</i>	<b>Dragon Hill Condominium</b>
<i>PWS Address</i>	<b>State Route 2</b>
<i>City/Town</i>	<b>Shelburne, Massachusetts</b>
<i>PWS ID Number</i>	<b>1268011</b>
<i>Local Contact</i>	<b>Mr. Elliot Levin</b>
<i>Phone Number</i>	<b>413-772-0076</b>

<i>Well Name</i>	<i>Source ID#</i>	<i>Zone I (in feet)</i>	<i>IWPA (in feet)</i>	<i>Source Susceptibility</i>
Well #1	1268011-01G	273	720	Moderate
Well #2	1268011-02G	273	720	Moderate

## Introduction

We are all concerned about the quality of the water we drink. Many potential contaminant sources, including septic systems, road salt and improperly disposed of hazardous materials may threaten the quality of water from drinking water wells. Citizens and local officials can work together to better protect drinking water sources.

### Purpose of this report:

This report is a planning tool to support local and state efforts to improve water supply protection. By identifying land uses within water supply protection areas that may be potential contaminant sources, the assessment helps focus protection efforts on appropriate best management practices (BMPs) and drinking water source protection measures. Department of Environmental Protection (DEP) staff are available to provide information about funding and other resources that may be available to your community.

### This report includes:

1. Description of the Water System
2. Discussion of Land Uses within Protection Areas
3. Recommendations for Protection
4. Attachments, including a Map of the Protection Areas

## 1. Description of the Water System

The Dragon Hill Condominium complex is located south of Route 2 and consists of nine buildings with a total of 18 units. All units have individual, 275-gallon oil tanks located in basements, fueling the forced hot water heating systems. Footing drains and individual unit basement floor drains discharge to the ground surface at different locations throughout the complex. The facilities include internal transportation, parking, lawn and wooded areas. There is no municipal wastewater disposal available and therefore the homes are served by onsite septic disposal. The leachfields are partially within the IWPA but topographically downgradient from the wells.

### What is a Protection Area?

A well's water supply protection area is the land around the well where protection activities should be focused. Each well has a Zone I protective radius and an Interim Wellhead Protection Area (IWPA).

- **The Zone I** is the area that should be owned or controlled by the water supplier and limited to water supply activities.

- **The IWPA** is the larger area that is likely to contribute water to the well.

In many instances the IWPA does not include the entire land area that could contribute water to the well. Therefore, the well may be susceptible to contamination from activities outside of the IWPA that are not identified in this report.

### What is Susceptibility?

Susceptibility is a measure of a well's potential to become contaminated due to land uses and activities within the Zone I and Interim Wellhead Protection Area (IWPA).

The complex is served by two active wells, Wells #1 (01G) and #2 (02G) that pump in a lead/lag sequence (well #1 being the lead well) to the storage tank, located in a secure vault. There is an unapproved well #3 (03G) kept as an emergency source. Although this report does not address that well specifically, well #3 is located adjacent to the active wells. The system maintains a propane back-up generator.

The Zone I and Interim Wellhead Protection Area radii for Wells #1 and #2 are 273 feet and 720 feet, respectively. The protective radii were based on an approved pumping rate of 14,400 gallons per day (gpd) determined through a pumping test required by the DEP New Source Approval Process (NSA). Please refer to the attached map that shows the Zone I and IWPA radii. The Zone I is the area immediately around the wellhead while the IWPA is a larger area that likely contributes water to the wellhead. The IWPA is only an interim protection area; the actual area of contribution to the wells may be larger or smaller. There are two units partially located within the Zone I of well #1.

Wells #1 and #2 are 750-feet deep, 6-inch diameter bedrock wells; both wells are completed approximately 2 feet above grade. The complex is located on an upland area underlain by till and shallow bedrock. The driller's log indicates till over schist. The bedrock is mapped as metamorphic quartz-mica schist with marble interbeds of the Conway Formation. Wells drilled in these conditions are considered highly vulnerable to potential contamination from the ground surface because there is no significant hydrogeologic barrier, such as clay, to prevent surface contamination from migrating into the bedrock aquifer.

The Dragon Hill Condominium well water does not require and does not have treatment at this time. For current information on monitoring results, please review the Consumer Confidence report (CCR) that is issued annually by the water supplier or refer questions to the water supply contact listed above in Table 1.

## 2. Discussion of Land Uses in the Protection Areas

There are few land uses and activities within the drinking water supply protection areas that are potential sources of contamination. Therefore, the overall ranking of susceptibility to contamination for the wells is moderate, based on the presence of moderate threat land use or activity in the Zone I and IWPA, as seen in Table 2. The Association is commended for current efforts to protect the water supply.

**Table 2: Table of Activities Common to the Protection Areas**

Potential Contaminant Sources	Zone I	IWPA	Threat	Comments
Internal transportation corridors	No	Both Wells	Moderate	Limit road salt usage. Monitor for spills
Ground mounted transformers	No	Both Wells	Moderate	Potential release of MODF
Septic system components	No	Both Wells	Moderate	All components in IWPA
Residential development	Well #1	Both Wells	Moderate	Household hazardous materials and pesticides
Floor drains/Fuel oil storage	Yes	Yes	Moderate	Seal the drains. Contact UIC Coordinator.
Storm drains	No	Both Wells	Low	Road salt, spills and runoff

\* -For more information on Contaminants of Concern associated with individual facility types and land uses please see the SWAP Draft Land Use / Associated Contaminants Matrix on DEP's website - [www.state.ma.us/dep/brp/dws/](http://www.state.ma.us/dep/brp/dws/).

**Key land use issues include:**

1. **Non-conforming activities in the Zone I (Well #1);**
2. **Residential development;**
3. **Septic system; and**
4. **Floor drains.**

**1. Non-conforming activities in the Zone Is** – The Zone I for Well #1 is non-conforming with respect to MA DEP land use restrictions, which allow only water supply related activities in Zone Is. The Zone I for Well #1 contains a portion of two units along with the parking and other activities associated with a residential unit. Please note that systems not meeting DEP Zone I requirements must receive DEP approval and address Zone I issues prior to increasing water use, modifying systems or conducting any activities within Zone I. The Zone I for Well #2 is in compliance with the Zone I restrictions.

**Recommendations:**

- ✓ Do not conduct any additional activities within the Zone

I. Contact MA DEP prior to conducting any activities within Zone I.

- ✓ Prepare an emergency response plan for responding to an accidental release.
- ✓ Encourage residents to utilize Shelburne's household hazardous waste collection days.
- ✓ Monitor parking lots for spills and leaks.
- ✓ Record water meter data regularly to monitor water use and help assess system for potential leaks.

**2. Residential development**– Residential development includes the condominium complex. Normal residential activities pose minimal threat to the water quality of the public water supply provided homeowners are aware of the potential hazards of household waste, lawn care chemicals, animal waste and improper disposal through septic systems and they utilize best management practices. In addition, each unit has a floor drain in the basement.

**Recommendations:**

- ✓ Provide residents with information about protecting the facilities resources. Include information on Best Management Practices (BMPs) for the use of pesticides, household hazardous waste and septic system maintenance and disposal practices.
- ✓ Encourage residents to utilize the Franklin County Solid Waste Management facilities for household hazardous waste and paint exchange.

**3. Septic systems** - Septic systems are located within the IWPA of the wells. If a septic system fails or is not properly maintained it could be a potential source of microbial contamination. Improper disposal of household hazardous chemicals to septic systems is a potential source of contamination to the water supply.

**Recommendations:**

- ✓ Refer to recommendations under item 2.
- ✓ Septic system components should be located, inspected, and maintained on a regular basis. Refer to the attachments for more information regarding septic systems.
- ✓ Avoid septic tank cleaners, especially those with acids and solvents.

**4. Floor drains** - Floor drains are often installed where boilers are present to provide drainage in the event of a plumbing failure. If there is a potential for hazardous materials such as oil to flow accidentally into the floor drain, however, preventive measures must be taken. Hazardous materials may not be stored without containment in areas where spills could flow into the floor drains. Floor drains in an area with hazardous materials or petroleum products that do not have secondary containment must discharge to a sewer or a tight tank or be sealed.

**Recommendations:**

Consider the three following options:

- ◆ Seal off the floor drains. Without a trap, floor drains may act as conduits for natural radon gas or for stormwater to backup into the basements. Unless the drains are necessary, seal the drains. Please see the attached UIC forms and contact **Rick Larson of the MA DEP Springfield Office at 413-755-2207 for the proper procedures**. If a sump is required in the basement to relieve hydrostatic pressure beneath the floor, it must be entirely set below grade and sealed (e.g. sealed with a watertight cover) to prevent any accidental spills from entering the sump. Water from the sump cannot discharge to the septic system.

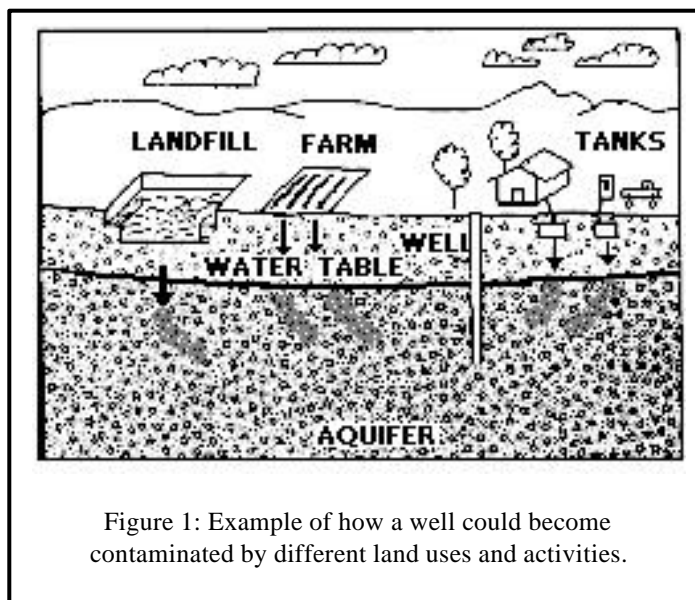


Figure 1: Example of how a well could become contaminated by different land uses and activities.

## Glossary

**Zone I:** The area closest to a well; a 100 to 400-foot radius proportional to the well's pumping rate. To determine your Zone I radius, refer to the attached map.

**IWPA:** A 400-foot to ½ mile radius around a public water supply well proportional to its pumping rate; the area DEP recommends for protection in the absence of a defined Zone II. To determine IWPA radius, refer to the attached map.

**Zone II:** The primary recharge area defined by a hydrogeologic study.

**Aquifer:** An underground water-bearing layer of permeable material that will yield water in a usable quantity to a well.

**Hydrogeologic Barrier:** An underground layer of impermeable material that resists penetration by water.

**Recharge Area:** The surface area that contributes water to a well.

## For More Information:

Contact Catherine Skiba in DEP's Springfield Office at (413) 755-2119 for more information and for assistance in improving current protection measures.

More information relating to drinking water and source protection is available on DEP's web site at:  
[www.state.ma.us/dep/brp/dws](http://www.state.ma.us/dep/brp/dws).

- ◆ Protect the floor drains from contaminants. Oil lines from the tank to the boiler should be sleeved so that any leaks would drain back to the tank or minimal oil would leak in the event of a leak. Install a small berm around the boiler and a larger containment structure around the ASTs to contain 110% of the tank.
- ◆ If the drain is not sealed and protection measures are not taken, install a tight tank and connect the floor drain to the tank. Contact Rick Larson for guidance.

Other uses and activities identified in the protection areas are stormwater discharges located within the IWPA of the wells and electrical transformers. The condominium should consider BMPs and include periodic cleaning of catch basins and street sweeping. Street sweepings and catch basin cleanings are considered solid waste and should be handled as described in the DEP's policy. All electrical transformers contain oil and if the transformers were to rupture, oil would be released to the soils and could potentially impact water quality. Keep the area near the transformer free of tree limbs that could endanger the transformer in a storm.

Work with the DEP and local officials regarding protecting the water supplies through emergency response coordination.

## 3. Protection Recommendations

To reduce the system's susceptibility to contamination, the Dragon Hills Condominium should review and adopt the following recommendations:

### Zone I and IWPA:

- ✓ Keep all new non-water supply activities out of the Zone I.
- ✓ Please note that water systems not meeting DEP Zone I requirements must get DEP approval and address Zone I issues prior to increasing water use, modifying their system or conducting any additional non-conforming activities in Zone I.
- ✓ Prohibit public access to the wells by locking facilities and posting signs at the facility entrance. Check the integrity of the well caps regularly and replace as necessary.
- ✓ Conduct regular inspections of the Zone I. Look for illegal dumping, evidence of vandalism, check any aboveground tanks for leaks, etc.
- ✓ Work with the local fire department, DEP, State highway, and local officials regarding protecting the water supplies through emergency response coordination.
- ✓ Be sure that the town is aware that your facility is a public water supply so that you can be notified of any accidents or threats from accidents. Ask that your facility be included in Town wide water supply protection efforts.

### Training and Education:

- ✓ Continue staff training on proper hazardous material use, disposal, emergency response, and best management practices; include custodial staff, certified operator, and other appropriate staff.
- ✓ Maintain the drinking water protection area signs at key visibility locations.

### Facilities Management:

- ✓ Implement standard operating procedures regarding proper storage, use and disposal of any hazardous materials at the facility. To learn more, see the hazardous materials guidance manual at [www.state.ma.us/dep/bwp/dhm/dhmpubs.html](http://www.state.ma.us/dep/bwp/dhm/dhmpubs.html).
- ✓ Continue utilizing Best Management Practices (BMPs) for the use of fertilizers pesticides on facility property.
- ✓ Keep the area near the transformer free of tree limbs that could endanger the transformer in a storm.

### Planning:

- ✓ Work with local officials in town to include the facility IWPA in an Aquifer Protection District and to assist you in improving protection.

Copies of this assessment have been provided to the public water supplier and town boards.

- ✓ Have a plan to address short-term water shortages and long-term water demands. Keep the phone number of a bottled water company readily available.
- ✓ Supplement the SWAP assessment with additional local information and incorporate it into water supply educational efforts. Use a potential contaminant threat inventory to assist in setting priorities, focusing inspections, and creating educational activities.

These recommendations are only part of your ongoing local drinking water source protection. Citizens and community officials should use this SWAP report to spur discussion of local drinking water protection measures.

**Additional Documents:**

To help with source protection efforts, more information is available by request or online at [www.state.ma.us/dep/brp/dws](http://www.state.ma.us/dep/brp/dws), including:

- Water Supply Protection Guidance Materials such as model regulations, Best Management Practice information, and general water supply protection information.

**4. Attachments**

- Maps of the Public Water Supply (PWS) Protection Areas
- Recommended Source Protection Measures Fact Sheet
- Pesticide Use Fact Sheet
- Fertilizer Use Fact Sheet
- Franklin County Solid Waste Management District Fact Sheet